

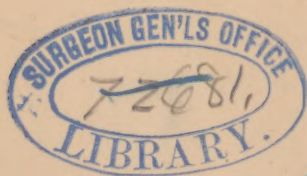
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By HENRY A. MARTIN, M. D.,

BREVET LIEUTENANT-COLONEL AND LATE STAFF SURGEON U. S. V.

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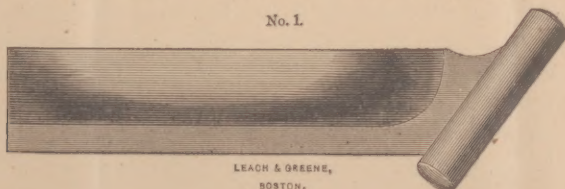
COLLES'S FRACTURE AND DR. CARR'S SPLINT.

BY HENRY A. MARTIN, M. D.,

Brevet Lieutenant-Colonel and late Staff Surgeon U. S. V.

FRACTURES of the lower inch or two of the radius constitute by far the most frequent of this class of lesions. Even the clavicle is not so frequently reported as fractured, although every case of broken clavicle is known at once, while very many fractures of the lower inch of the radius escape vulgar and even professional detection, and are classed as bad "sprains" merely. It is only when too late for remedy, when swelling has subsided and fragments united, that the characteristic deformity reveals, with certainty, that the case has been one of fracture. I need not state here how numerous have been the forms of apparatus contrived to meet the special exigencies of treatment of these cases. You can find in Hamilton's excellent book over thirty pages devoted to Colles's fracture, and delineations and descriptions of a great many methods for its treatment, including one of Dr. Hamilton's own invention. Within a few months quite a book has been published in London, the principal topic of which is the treatment of Colles's fracture by an improved splint, invented by Professor Gordon, of Queen's College, Ireland. Professor Gordon has won great fame by the splint of which he now offers an improved form, and I think justly, for his splint is, I believe, the only one except Dr. Carr's which recognizes at all a principle of which I consider the splint I am about to describe to be a far more perfect recognition. Dr. Carr is a physician practicing in Goffstown, N. H., whom I have never seen, and with whom my only acquaintance is by report and correspondence. I mention this fact, and also another, that

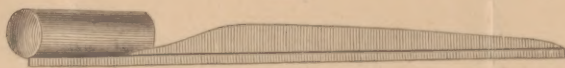
No. 1.



I have nothing to do with the invention; it is Dr. Carr's, and his only. I cannot suggest an improvement in it. I give two drawings of Dr. Carr's splint. One is a view of the upper surface of a right-arm splint,

the other a profile of its radial side. Its length is eleven and one half inches, its width two inches. It consists of a strip of light wood one

No. 2.



sixth of an inch in thickness, on which is laid a carved wooden "bed" of peculiar form, the irregularly convex surface of which is exactly adapted to the concavity of the lower side of the radius. An oblique cross-piece or "bar," round, four inches long and one inch in diameter, is attached to its distal end. The original peculiarity of the instrument is that its author was the first who has, apparently, reflected that the radius is a much-curved bone, and that treatment of its fractures on a perfectly flat splint can only result in more or less deformity in the bone itself, and in such a change in the relations of its lower articulating surfaces as must, almost inevitably, induce greater or less impairment of the symmetry, usefulness, and comfort of the wrist. In Professor Gordon's splint, the concavity of the radius is recognized as an indication for treatment; but in even the improved form of that apparatus the convex "bed" is applied to the *side* of the bone and not *under* it. For American surgery I must claim that Dr. Carr's splint was invented in 1843, long before that of Professor Gordon. The cross-bar is to support the hand; when the latter grasps, or is firmly bound to it, it will be perceived that the hand is flexed and inclined towards the ulnar side of the arm, and the constantly observed tendency to subluxation of the ulna and very prominent and perceptible deformity resulting therefrom is obviated. There is nothing original in this cross-bar; it is to be found in Bond's very ingenious splint, and in others.

When a patient comes to me with a Colles's fracture, I take the splint proper to the side injured, lay along its upper surface a quadruple fold of old cotton sheeting, a little wider than the whole width of the splint, and extending from the cross-bar to an inch beyond its proximal extremity. The lower surface of the fore-arm is then laid on this, so that the cross-bar comes very exactly under the metacarpo-phalangeal articulations. Two or three turns of bandage may now be thrown around the middle of the fore-arm, binding it firmly to the splint, and the patient requested to grasp the cross-bar as strongly as may be; in this he may require the aid of the surgeon's hand. This action of the hand will reduce at once a very large proportion of all fractures of the lower part of the radius, and its doing so is a sufficient proof of the perfect adaptability of the apparatus for the lesion for which it is designed. Of course, the surgeon can, if he prefers, reduce the fracture *before* applying the splint; some cases require this to be done, and *all* those in which the fracture is complicated with subluxation of the two rows of carpal bones,

which should be looked for sharply, and not placed in the splint till *thoroughly* put in proper position. A properly padded, very light, thin splint strip, say eight or nine inches long and two inches wide, may now be laid along the back of the radial side of the fore-arm from the carpo-metacarpal junction. This dorsal splint is not always absolutely necessary, but may as well be always applied. All that is now requisite is to bandage in the usual way; the bandage may extend upwards from the middle of the metacarpus to the proximal end of the splint, leaving—and this is *very* important—the fingers to be exercised and even used freely, for holding fork, spoon, etc. After the first week the bandage need extend no farther than to the carpo-metacarpal articulations, leaving the patient free and useful motion of the hand. If the bandage, however, is thus limited, the surgeon should see that the carpus is firmly and immovably attached to the splint; this may be well done by winding a strip of good sticking-plaster, an inch and a quarter wide, three times round the wrist and splint. The great value of this mode of treatment is that it relieves the patient of much discomfort and enforced disability, and that, when the fracture is sufficiently consolidated for the splint to be removed, the hand will be ready for use, and entirely free from the stiffness, often amounting almost to ankylosis, so familiar to hospital surgeons and all who have had or seen much of this sort of surgery,—a stiffness rendering the hand more or less useless for weeks, months, and sometimes even years. In fifty cases of “simple fracture near the lower end of the radius, only sixteen are positively known to have left no perceptible deformity or stiffness about the joint.” “Twice I have found the wrist and finger joints quite stiff after the lapse of one year; in one case I have found the same condition after two years, in one case after three years, and in two cases after five years.” “If we confine our remarks to Colles’s fracture, the deformity which has been observed most often, and, indeed, with only rare exceptions, *being found in some degree, more or less, in several of those cases which I have marked as perfect*, consists in a projection of the lower end of the ulna inwards and generally a little forwards.”¹ In the part of Dr. Hamilton’s excellent work from which these extracts are made may be found a great deal more in regard to the frequent and persistent stiffness, deformity, and lameness consequent upon these fractures. Dr. Hamilton combats the doctrine that the stiffness of the finger-joints is a result of extension of inflammation to those joints, and maintains, what is doubtless true to a certain extent, that it results from an “effusion, first serous and subsequently fibrinous, along the sheaths of the tendons;” “an ankylosis produced, not as has generally been affirmed, by extension of the inflammation to these [the finger] joints, but by the inflammatory

¹ Hamilton on Fractures and Dislocations, Philadelphia, 1860, page 279. The italics are mine. — H. A. M.

effusion and consequent adhesions along the thecæ and serous sheaths." "The fingers are quite as often thus ankylosed as the wrist-joint itself, a circumstance which is wholly inexplicable on the doctrine that the ankylosis is due to an inflammation *in* the joints." Dr. Hamilton¹ says that the same stiffness, etc., is as often to be noted after severe sprains and other severe injuries of the wrist as in fractures, and infers that the more or less perfect adjustment of the fracture has nothing to do with these disagreeable *sequelæ*. I should say that when a fracture is imperfectly reduced, the degree of inflammation at and about the seat of injury must be great and the amount of effusion large. When the fracture is without delay and *perfectly* "set," both would be reduced to a minimum.

With this splint applied, the patient can with ease and safety wear his ordinary coat, and take it off and put it on with little or no assistance. The length of time before the splint may be safely removed must depend a great deal, of course, on the prudence and occupation of the patient.

In the treatment I now advocate there is a most perfect coaptation, and, as I have thoroughly ascertained by very many observations, *no tendency whatever to displacement* so long as the bandaging is kept properly close. In the last case (just discharged) under my care, a laboring man sixty-three years old, I removed the splint on the eighteenth day, found the wrist in perfect "drawing," told him to wear a sling, and come to see me every three days. I saw him at these intervals for two weeks, during which there was not the slightest tendency to distortion. In the first dozen or fifteen cases I treated with this apparatus I saw the patient five or six times in the course of treatment, and almost every time unwound the bandage, keeping the splint carefully in place; in not one instance did I find the slightest tendency to displacement. This was, of course, experimental, to ascertain the capabilities of the method of treatment. I by no means recommend meddling with and frequent examination of fractures, as when I narrated the above experiments I was most unkindly and disingenuously twitted with doing by a famous New York surgical specialist, at the late meeting of the American Medical Association at Philadelphia. In treating Colles's fracture, now, I never take off the bandage nor even partially unwind it, unless to tighten it, from its first application till its final removal, nor would I require to see the patient in the intervening time but for the probability of loosening, or the possibility of slipping of the bandage or splint.

I have already, in six years, treated about forty-five cases, of all degrees of severity and complication, in which the lower two inches of the radius was the seat of fracture. In none of these was deformity to be recognized at the time that the apparatus was removed. I have seen

¹ Pages 279, 280.

many of these cases years after the injury, and in not one have I been able to detect which side was injured, from any abnormal variation.

A most absolute proof of the perfect adjustment attained by Carr's method is found in entire relief from pain very soon after the arm is "put up." I have given Leach and Greene, instrument makers of this city, approved patterns of Carr's splint, only stipulating, as there is no patent, reserved right, or royalty of any sort to be paid, that they will afford it to the profession at as low a price as may be consistent with a reasonable profit.

I have omitted to recommend the use of Carr's splint in cases of sprain of the wrist. In no other way that I am acquainted with can such perfect rest and consequent immunity from pain be procured for such cases. There is a large class of cases of injury of the wrist, in which fracture of the styloid process of the radius exists, but cannot be made out with absolute certainty; when such cases are treated as sprains merely, the positive fact of fracture is ascertained too late for remedy. It is not always or often easy in *any* case of so-called sprain of the wrist to say, positively, that fracture does *not* exist, and even where there is none of the bone there is always contusion, twisting, and partial or complete fracture of inter-osseous ligaments, injuries requiring rest as much as if the bone were broken.

